

REMARKS

Favorable reconsideration of this application is respectfully requested in view of the amendments above and the following remarks. By virtue of the foregoing amendments, Claims 6 and 21 have been amended to correct typographical errors. Thus, Claims 1-23 remain pending in the present application.

No new matter has been presented by way of the claim amendments and such amendments are deemed unobjectionable. Entry thereof is respectfully requested.

Attached hereto is a marked up version of the changes made to the claims by the present amendment. The attached page is captioned "Version With Markings to Show Changes Made."

Teleconference

The Examiner is respectfully thanked for the courtesies extended during the teleconference with the undersigned on June 10, 2003. Although no agreement was reached during that teleconference, the Examiner's offer to contact the undersigned prior to issuance of a future Office Action is noted with appreciation. As the Examiner may recall, this offer was extended due to the timing problems associated with attempting to schedule an interview with the Examiner as well as the lengthy prosecution of this application. The undersigned graciously awaits hearing from the Examiner should she decide to issue another Official Action in the present application.

Specification

The Official Action indicates that the Specification has not been checked to the extent necessary to determine the presence of all possible minor errors. In addition, the Official

Action requests Applicant's cooperation in correcting any errors of which the Applicant may become aware in the Specification.

In compliance with the Examiner's request, the Applicant's representative has carefully reviewed the Specification and no errors have been found. The Examiner is therefore respectfully requested to withdraw her request to correct errors in the Specification.

Claim Rejection Under 35 U.S.C. §112

The Official Action sets forth a rejection of Claim 6 as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. More particularly, the Official Action states that there is insufficient antecedent basis for the recitation "the requested block of data" in Claim 6.

By virtue of the amendment above, Claim 6 has been amended to read "the requested data". The Applicant believes that this amendment overcomes the above-cited rejection of Claim 6. Accordingly, the Examiner is respectfully requested to withdraw the rejection of Claim 6 as failing to comply with the provisions of 35 U.S.C. §112, second paragraph.

Claim Rejection Under 35 U.S.C. §103

Claims 1-20 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the disclosure contained in U.S. Patent No. 6,209,065 to Van Doren et al. ("Van Doren"). It should be noted that a rejection of Claims 21-23 is set forth in the Official Action under this section but was not included in the heading as allegedly being unpatentable over the disclosure contained in Van Doren. As this omission is apparently a mere oversight, the following remarks will also address Claims 21-23. In any respect, the Applicant

respectfully traverses this rejection because Van Doren does not disclose the invention as claimed in Claims 1, 9, and 19 and the claims that depend therefrom.

In setting forth the rejection of Claims 1, 9, and 19, the Official Action correctly notes that Van Doren fails to disclose that only the processor or shared memory having the valid copy responds to the request. The Official Action addresses this deficiency in Van Doren by asserting official notice that it is well known that a processor having ownership of the valid data provides the valid data. Applicants neither agree nor disagree with the position asserted in the Official Action. Instead, it is respectfully submitted that the arguments presented in the Official Action do not make up for the deficiencies in Van Doren.

The arguments asserted in the Official Action do not suggest that **only** the processor or shared memory having the valid copy responds to the request. Clearly, the processor or shared memory having the valid copy will respond to the request. However, what is not discussed in the Official Action is how the other processors and memory that have invalid copies of the data behave in response to requests for data. That is, there is no discussion in the Official Action of whether the processors and memory that have invalid copies respond to the request for data. In contrast to the present invention, Van Doren discloses that the processors having invalid copies also respond to the request for data. For example, in column 19, lines 9-11, Van Doren states that “[o]nce these [FrdMod and Inval] probes reach their destinations, *each* processor returns either the data or an acknowledgement back to the directory control logic 1415.” (emphasis added).

In addition, based upon the assertions made, it appears that the Official Action may have mistakenly interpreted the language in Claims 1, 9, and 19 as “only the processor or memory having the valid copy returns the valid copy to the requesting processor.” This is not what is claimed in Claims 1, 9, and 19. Instead, these claims recite, “that only the processor

or memory having the valid copy of the data responds to the request.” Thus, it is the response to the request and not the return of the valid copy that only the processor or memory having the valid copy of the data performs. This element is clearly not discussed in the Official Action.

Moreover, even assuming for the sake of argument that the motivation for modifying Van Doren as asserted in the Official Action were valid, such a proposed modification would not yield the present invention as set forth in Claims 1, 9, and 19. As stated hereinabove, the proposed modification would not include the element that “only the processor or memory having the valid copy of the data responds to the request.” It is thus respectfully submitted that Van Doren does not render the present invention as set forth in Claims 1, 9, and 19 unpatentable.

Accordingly, the Examiner is respectfully requested to withdraw the rejection of Claims 1, 9, and 19 as being unpatentable over the disclosure contained in Van Doren.

Claims 2-5, 7, 8, 10-18 and 20-23 depend from allowable Claims 1, 9, and 19 and are also allowable at least by virtue of their dependencies. These claims are also allowable as the elements contained therein are not disclosed in the Van Doren document.

For instance, Claim 6 of the present invention includes that the one or more processors and memory that receive a request for data have invalid copies of the requested data drop the request. The Official Action sets forth a rejection of Claim 6 as being unpatentable over the disclosure contained in column 7, lines 15-18 of the Van Doren document. It is respectfully submitted, however, that the above-cited section of the Van Doren document does not disclose at least this element.

The disclosure in column 7, lines 15-18 of Van Doren states, “[i]n response to the FrdMod probe, the dirty cache line is returned to the system and the dirty copy stored in the

cache is invalidated.” Thus, Van Doren discloses that the processors that receive the request and have invalid copies do not drop the request, but rather, return “the dirty cache line” to the system. This is in direct contrast with the elements set forth in Claim 6.

As another example, Claims 21-23 include that the valid copy is returned asynchronously. The term “asynchronous” is defined in the specification of the present application as a scheme where the processors in a multiprocessor system “do not have to synchronize a response to a request for a data block.” (Specification, page 5, line 20-23). The Official Action cites to column 5, lines 63-67 and column 7, lines 63-65 of the Van Doren document as disclosing asynchronous responses to requests. These cited sections disclose the ability of the Van Doren invention to issue memory reference operations out-of-order. Issuance of memory reference operations out-of-order is not the same as not requiring a synchronization of a response to a request for a data block. Accordingly, the disclosure contained in Van Doren regarding out-of-order memory reference operations cannot render unpatentable the elements contained in Claims 21-23.

Conclusion

In light of the foregoing, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should the Examiner believe that a telephone conference with the undersigned would assist in resolving any issues pertaining to the allowability of the above-identified application, please contact the undersigned at the telephone number listed below. Please

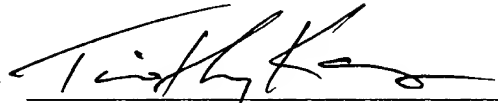
grant any required extensions of time and charge any fees due in connection with this request to deposit account no. 08-2025.

Respectfully submitted,

Fong Pong

Dated: June 17, 2003

By



Timothy B. Kang
Registration No.: 46,423

MANNAVA & KANG
2930 Langdon Gate Drive
Fairfax, VA 22031
(703) 560-8503
(703) 991-1162 (facsimile)

Version With Markings to Show Changes Made

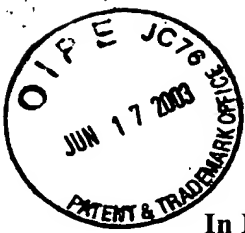
Pursuant to 37 CFR § 1.121, the following is a copy of all amendments with deletions indicated by bracketing and additions indicated by underlining.

IN THE CLAIMS:

Claims 6 and 21 have been amended as follows:

6. (Once Amended) The method of claim 1 in which the processors and shared memory that have an invalid copy of the requested [block of] data drop the request without responding.

21. (Once Amended) The method of claim 1, wherein the step of returning the valid copy of the requested data comprises returning the valid copy [is] asynchronously.



PATENT
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In The U.S. Patent and Trademark Office

In Re the Application of:

Inventor(s): Fong Pong **Confirmation No.:** 8306
Serial No.: 09/444,173 **Examiner:** Jasmine Song
Filed: November 19, 1999 **Group Art Unit:** 2188

Title: ASYNCHRONOUS CACHE COHERENCE ARCHITECTURE IN A SHARED
MEMORY MULTIPROCESSOR WITH POINT-TO-POINT LINKS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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I hereby certify that this correspondence is being deposited with the United States
Patent and Trademark Office. This correspondence contains the following document(s):

1 sheet of Transmittal Letter for Response/Amendment. (2 copies).
8 sheets of Amendment Under 37 C.F.R. § 1.111.

Respectfully submitted,

MANNAVA & KANG

Timothy B. Kang
Reg. No.: 46,423

On June 17, 2003

MANNAVA & KANG
2930 Langdon Gate Drive
Fairfax, VA 22031
(703) 560-8503
(703) 991-1162 (facsimile)